water for life

alberta's strategy for sustainability

November 2003

Alberta
GOVERNMENT OF ALBERTA

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all living things need water to survive.

introduction

In Alberta, our quality of life, and life itself, depends on having a healthy and sustainable water supply for the environment, for our communities and for our economic well-being.

The Government of Alberta is committed to the wise management of Alberta's water quantity and quality for the benefit of Albertans now and in the future.

the need for a provincial water strategy

Alberta is facing significant pressures on its water resources.

Population growth, droughts and agricultural and industrial development are increasing demand and pressure on the province's water supplies, and the risk to the health and well-being of Albertans, our economy and our aquatic ecosystems.

In the past, Alberta has been able to manage our water supply while maintaining a healthy aquatic environment because there has been a relatively abundant, clean supply to meet the needs of communities and the economy.

However, fluctuating and unpredictable water supply in recent years has stressed the need to make some major shifts in our approach to managing this renewable, but finite, resource.

Water for Life: Alberta's Strategy for Sustainability is the Government of Alberta's response to develop a new water management approach and outline specific strategies and actions to address these issues.

involving albertans in developing the strategy

Because water is vital to all Albertans, their opinions and ideas play a vital role in the development of a provincial water strategy.

An extensive provincial consultation process was held between November 2001 and June 2002, and consisted of three major components – ideas generation, public outreach and consultation, and a Minister's Forum on Water.

The first phase – ideas generation – began in Fall 2001 when a small, diverse group of Albertans provided the Government of Alberta with advice on water management in the province. This "ideas" group identified the challenges associated with managing water in the province and several opportunities for improving it.

These ideas provided the framework for the second stage of the process, a comprehensive public outreach and consultation, held in March and April 2002. During this phase, key stakeholders and Albertans responded to the initial directions proposed by the ideas group, and offered their own advice, opinions and ideas.

The third stage in the strategy's consultation process was a Minister's Forum on Water, held in Red Deer in June 2002. The forum involved 108 invited Albertans and experts. They reviewed the input from the public outreach and consultation process and discussed next steps and solutions.

Following the final report from the Minister's Forum, Alberta Environment began working with a cross-government working group, to compile the ideas and feedback heard through all three levels of the consultation process and to develop a series of recommendations and a framework that will serve as the provincial water strategy.

In addition to confirming the strong need for a strategy for sustaining Alberta's water supply, a clear set of principles emerged from the consultation process:

- **All Albertans must recognize there are limits to the available water supply.**
- **Alberta's water resources must be managed within the capacity of individual watersheds.**
- **Citizens, communities, industry and government must share responsibility for water management in Alberta, and work together to improve conditions within their local watershed.**
- **Knowledge of Alberta's water supply and quality is the foundation for effective decision-making.**
- **Albertans must become leaders at using water more effectively and efficiently, and will use and reuse water wisely and responsibly.**
- **Alberta must preserve the "first-in-time, first-in-right" principle for granting and administering water allocations, but water allocations will be transferable to ensure societal demands and needs can be met.**
- **Healthy aquatic ecosystems are vital to a high quality of life for Albertans and must be preserved.**
- **Groundwater and surface water quality must be preserved in pursuing economic and community development.**
- **Alberta will continue to be a leader in drinking water quality and standards to ensure Albertans have safe, secure drinking water.**

Building on these core principles, the Government of Alberta released its draft *Water for Life: Alberta's Strategy for Sustainability* in March 2003 outlining recommendations on managing Alberta's water needs, maintaining the province's economic prosperity, and addressing environmental concerns.

Following the release of the draft strategy, Albertans were invited to provide comments – through further workshops and discussions with the participants in the Minister's Water Forum, as well as online consultation with Albertans to help shape this final strategy.

goals and outcomes:

Throughout the extensive consultation process, Albertans reaffirmed three goals of a provincial water strategy:

- **Safe, secure drinking water supply**
- **Healthy aquatic ecosystems**
- **Reliable, quality water supplies for a sustainable economy**

To that end, *Water for Life* is based on the following commitments to Albertans:

- Albertans will be assured their drinking water is safe.
- Albertans will be assured that the province's aquatic ecosystems are maintained and protected.
- Albertans will be assured that water is managed effectively to support sustainable economic development.

The following specific outcomes in the short-, medium-, and long-term will help guide and measure the success of a strategy in achieving these goals:

safe, secure drinking water supply

Short-Term *(2004/05 to 2006/07)*

- Alberta has a comprehensive strategy to protect Albertans' drinking water.

Medium-Term *(2007/08 to 2009/10)*

- Albertans have full and complete knowledge of drinking water issues.
- Albertans have real-time access to information about drinking water quality in their community.

Long-Term *(2010/11 to 2013/14)*

- Alberta's drinking water infrastructure meets emerging standards and is managed for long-term sustainability.
- Albertans have the knowledge, tools and motivation to implement actions that will maintain or improve the province's water resources.

healthy aquatic ecosystems

Short-Term *(2004/05 to 2006/07)*

- Efforts to protect aquatic ecosystems in critical areas are underway.

Medium-Term *(2007/08 to 2009/10)*

- Water management objectives and priorities for sustaining aquatic ecosystems are established through watershed plans.

Long-Term *(2010/11 to 2013/14)*

- Water is managed and allocated to sustain aquatic ecosystems and ensure their contribution to Alberta's natural capital and quality of life are maintained.
- Albertans have the knowledge and tools to implement actions to maintain or improve Alberta's water resources.
- Communities are demonstrating leadership in watershed management.

reliable, quality water supplies for a sustainable economy

Short-Term *(2004/05 to 2006/07)*

- A broad range of water management tools and techniques are implemented.
- Albertans understand the value of water to the economy and quality of life.

Medium-Term *(2007/08 to 2009/10)*

- Water management objectives and priorities to support sustainable economic development are established through watershed plans.
- All sectors are demonstrating best management practices and improving efficiency and productivity associated with water use.

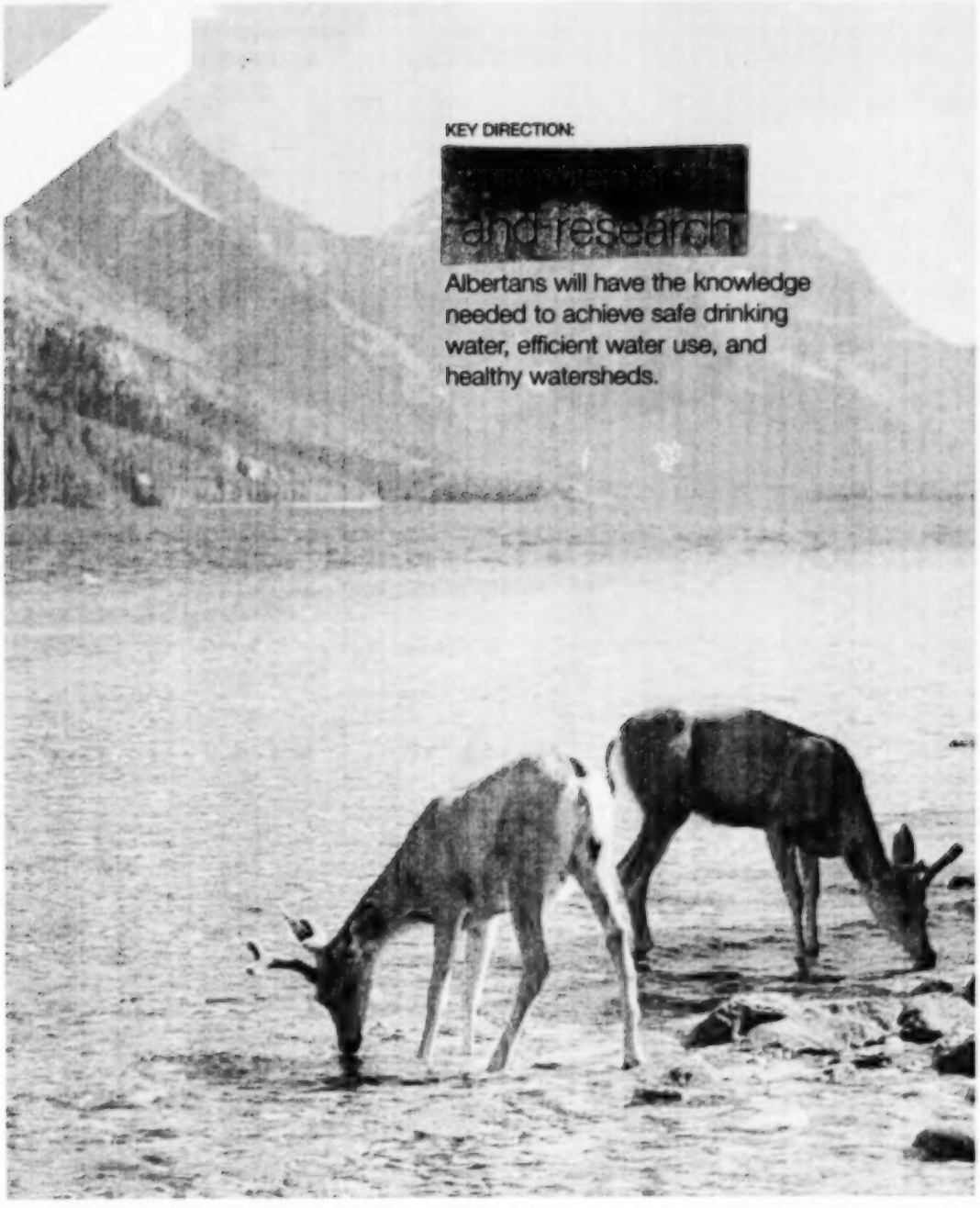
Long-Term *(2010/11 to 2013/14)*

- Water is managed and allocated to support sustainable economic development and the strategic priorities of the province.
- The overall efficiency and productivity of water use in Alberta has improved by 30 per cent from 2005 levels by 2015 (firm targets to be determined by the Provincial Water Advisory Council).
- Albertans have the knowledge, tools and motivation to implement actions that will maintain or improve the province's water resources.

key directions and actions:

In order to fulfill the goals of the strategy, and meet the specific targets set out by Albertans, the actions outlined in the *Water for Life* strategy revolve around three core areas of focus:

- **Knowledge and research**
- **Partnerships**
- **Water conservation**



KEY DIRECTION:

and research

Albertans will have the knowledge needed to achieve safe drinking water, efficient water use, and healthy watersheds.

From the very early stages of the discussions and consultation on a provincial water strategy, information and knowledge of our provincial water resource was clearly identified as the most critical element in our ability to manage water effectively.

This commitment to knowledge and research has three main elements – scientific knowledge of Alberta's water resources; an understanding of emerging water issues and opportunities; and ensuring all Albertans are aware of water issues and have the knowledge and tools necessary to make effective management decisions.

Alberta currently has a fairly strong, general understanding of its water resources. However, because of the unpredictability of water supply due to climate variability, and a growing base of knowledge about the effects of land use activities on water quality, there are still many issues and topics to investigate to improve water management and drive the development of technologies to improve the water system.

Specific actions related to knowledge and research include, but are not limited to, the following:

Short-Term *(2004/05 to 2006/07)*	SAFE, SECURE DRINKING WATER SUPPLY	HEALTHY AQUATIC ECO-SYSTEMS	RELIABLE QUALITY WATER SUPPLIES FOR A SUSTAINABLE ECONOMY
» Establish a provincial, multi-disciplinary water research centre.	✓	✓	✓
» Develop a provincial water research plan.	✓	✓	✓
» Complete an assessment of Alberta's surface water quality.	✓	✓	✓
» Establish a public awareness and education program to ensure Albertans have easy access to water resource information and services.	✓	✓	✓
» Complete an assessment of all drinking water facilities in the province.	✓		
» Establish an independent, on-going review process, on a five-year cycle, for Alberta's drinking water program.	✓		
» Establish emergency protocols, including support by staff and laboratory capacity, to protect Albertans from contaminants in drinking water.	✓		
» Develop a system for monitoring and assessing aquatic ecosystems.		✓	
» Establish science-based methods for determining the ecological requirements for a healthy aquatic environment.		✓	
» Determine the full cost of providing water through Alberta's water management infrastructure.			✓

Medium-Term *(2007/08 to 2009/10)*	SAFE, SECURE DRINKING WATER SUPPLY	HEALTHY AQUATIC ECO-SYSTEMS	RELIABLE QUALITY WATER SUPPLIES FOR A SUSTAINABLE ECONOMY
» Establish a provincial water information centre that brings together information from both private and public sources.	✓	✓	✓
» Provide Albertans with access to online reporting of all drinking water facility test sample results.	✓		
» Improve availability and access of information to all Albertans on private water systems.	✓		
» Report research results to Albertans.	✓	✓	✓
» Update water quality programs to support watershed protection and planning.	✓	✓	
» Complete an initial assessment of the status of aquatic ecosystems, including lakes, wetlands, streams and rivers.		✓	
» Monitor, evaluate and report on the water allocation transfer system.			✓

Long-Term *(2010/11 to 2013/14)*	SAFE, SECURE DRINKING WATER SUPPLY	HEALTHY AQUATIC ECO-SYSTEMS	RELIABLE QUALITY WATER SUPPLIES FOR A SUSTAINABLE ECONOMY
» Complete flood risk maps and warnings systems for all communities where a flood risk exists.			✓
» Understand the state of the quality and quantity of all surface water supply in all major basins.	✓	✓	✓
» Understand the state of the quality and quantity of Alberta's groundwater supply.	✓	✓	✓
» Establish a waterborne health surveillance and reporting system.	✓		
» Review the water allocation transfer system to ensure a viable market that moves water to support sustainable economic development.			✓
» Understand the state of Alberta's aquatic ecosystem.			✓

Additional details on all of these actions are available online at www.waterforlife.gov.ab.ca

meeting the need

issues:
gaps in water research knowledge
+
growing public demand for information
+
insufficient monitoring information
+
emerging issues affecting water quality and quantity
=
lack of sufficient information and knowledge to make effective decisions for the future

solution: invest in knowledge and research

KEY DIRECTION:

[redacted]

Citizens and stakeholders will have opportunities to actively participate in watershed management on a provincial, regional and community basis.

All Albertans use and affect the water resources within their watershed. From individual homes with their own well to large communities, industries and irrigation districts, water is withdrawn from the environment, and in many cases returned with its quality degraded.

Therefore, citizens, communities, industries and governments all share responsibility for the wise use and sustainability of their watersheds. Albertans must work together to set objectives for the watershed, identify issues, monitor the condition of the watershed and continuously adjust their use of water and activities on the landscape that affect the water.

Because the people who are immediately affected by specific water issues can also more directly and effectively find solutions to address them, the focus of *Water for Life* is to adopt a watershed approach to management. This allows focus to be placed on a geographic region.

To support this, a key focus of *Water for Life* is a shift to shared responsibility through a network of partnerships, use of outcome-based approaches, and collaboration in delivery of services.

While the Government of Alberta, led by Alberta Environment, will remain accountable and will continue to oversee water and watershed management activities in the province, *Water for Life* identifies three types of partnerships that are integral to achieving stewardship of our water resources:

- Provincial Water Advisory Council
- Watershed Planning and Advisory Councils
- Watershed Stewardship Groups

Each of these partnerships have different but compatible roles, and each involves interested Albertans in the planning and implementation of improved water and watershed management throughout the province.

provincial water advisory council

A multi-stakeholder Provincial Water Advisory Council will be established to oversee the overall implementation of *Water for Life*. The Council will also provide policy advice to government, similar to the way the provincial Clean Air Strategic Alliance does on air issues.
Because proactive water management involves understanding and responding effectively to issues, the Provincial Water Advisory Council will investigate and report on existing and emerging issues such as beneficial use, conservation opportunities, and economic instruments. Other responsibilities will include setting priorities for water research and consulting with Albertans on water issues on an on-going basis.

The Provincial Water Advisory Council will provide an overall, broad perspective and help to ensure outcomes are achieved across the province.

watershed planning and advisory councils

Throughout the public consultation, Albertans expressed a strong interest in having a significant role in managing Alberta's water resource, and in directly influencing policy and legislation development, tracking and reporting on the condition of watersheds and influencing change within watersheds.
To accomplish this, a number of Watershed Planning and Advisory Councils will be established to involve communities and stakeholders in watershed management. While these multi-stakeholder councils will not have a direct reporting relationship to the Provincial Water Advisory Council, they will

benefit from their guidance and mentoring. Involvement of some representatives from Watershed Planning and Advisory Councils at the provincial level will also be of mutual benefit to both levels of organization.

Watershed Planning and Advisory Councils will lead in watershed planning, develop best management practices, foster stewardship activities within the watershed, report on the state of the watershed, and educate users of the water resource.

watershed stewardship groups

Albertans have already demonstrated their concern for the local watersheds that they live in. Over forty community-based watershed stewardship groups have formed across the province. These groups are made up of volunteer citizens, often supported by local businesses and industries, who have taken the initiative to protect their local creek, stream, stretch of river, or the lake. The groups and individuals have been proactive and continue to develop on-the-ground solutions to ensure the protection of their specific watersheds.

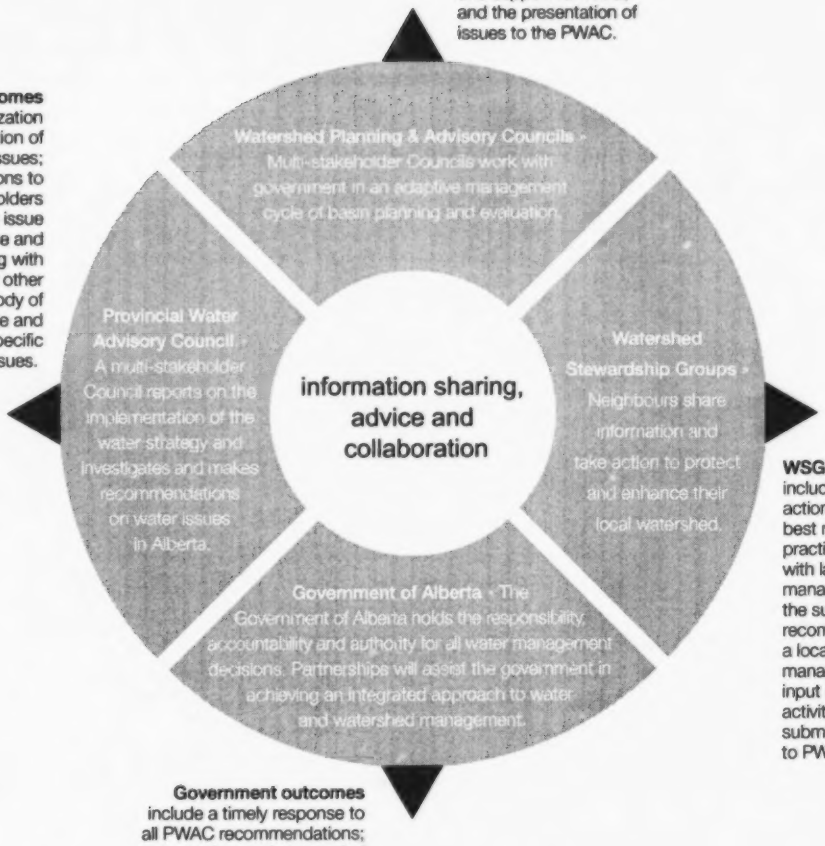
Therefore, these groups will continue to play a vital role in water management in the province. Community-based Watershed Stewardship Groups will be encouraged to participate at the Watershed Planning and Advisory Council level, for guidance, technical advice, and mentoring.

FIGURE 1:

three types of partnerships work together to make recommendations to the government, stakeholders and the public on improving water management throughout alberta's watersheds.

WPAC outcomes include state of the basin reports; recommendations in a watershed management plan; collaboration with land managers; "on-the-ground" actions; advice and support for WSG; and the presentation of issues to the PWAC.

PWAC outcomes include the prioritization and examination of water issues; recommendations to the GOA, stakeholders and the public on issue solutions; advice and information sharing with WPAC, WSG and other sectors; and a body of knowledge and expertise on specific water issues.


Watershed Planning & Advisory Councils - Multi-stakeholder Councils work with government in an adaptive management cycle of basin planning and evaluation.
Provincial Water Advisory Council - A multi-stakeholder Council reports on the implementation of the water strategy and investigates and makes recommendations on water issues in Alberta.
information sharing, advice and collaboration
Watershed Stewardship Groups - Neighbours share information and take action to protect and enhance their local watershed.
Government of Alberta - The Government of Alberta holds the responsibility, accountability and authority for all water management decisions. Partnerships will assist the government in achieving an integrated approach to water and watershed management.

WSG outcomes include "on-the-ground" actions; promotion of best management practises; collaboration with land use managers; state of the sub-basin reports; recommendations in a local water management plan; input into WPAC activities; and the submission of issues to PWAC.

Government outcomes include a timely response to all PWAC recommendations; review and approval of water management plans; and technical and administrative support for its partners.

legend

PWAC = Provincial Water Advisory Council
WPAC = Watershed Planning and Advisory Council
WSG = Watershed Stewardship Group
GOA = Government of Alberta

Under this model, specific actions related to Partnerships include, but are not limited to, the following:

Short-Term *(2004/05 to 2006/07)*	SAFE, SECURE DRINKING WATER SUPPLY	HEALTHY AQUATIC ECO-SYSTEMS	RELIABLE QUALITY WATER SUPPLIES FOR A SUSTAINABLE ECONOMY
» Establish a Provincial Water Advisory Council.	✓	✓	✓
» Complete a partnership framework, outlining the roles, responsibilities and relationships between government and its partners.	✓	✓	✓
» Establish watershed planning and advisory councils for the Milk, Oldman, Bow, Red Deer, Battle, North Saskatchewan, Cold Lake-Beaver River, and Lesser Slave Lake watersheds.		✓	✓
» Complete watershed management plans for the South Saskatchewan, Battle, Cold Lake-Beaver, and Lesser Slave Lake watersheds.		✓	✓
» Establish municipal grant criteria to support the development of regional water systems.	✓		
» Authorize water allocation transfers within all watersheds.			✓
» Develop and implement transboundary agreements in cooperation with neighbouring jurisdictions.			✓
» Establish Water Conservation Objectives for the South Saskatchewan River Basin.		✓	
» Develop a wetland policy and supporting action plan to achieve sustainable wetlands.		✓	
» Continue to manage water resources on the "first-in-time, first-in-right" principle, and in accord-ance with the provincial *Water Act*.			✓
» Evaluate, as part of the watershed planning process, water management infrastructure needs.			✓

Medium-Term *(2007/08 to 2009/10)*	SAFE, SECURE DRINKING WATER SUPPLY	HEALTHY AQUATIC ECO-SYSTEMS	RELIABLE QUALITY WATER SUPPLIES FOR A SUSTAINABLE ECONOMY
» Establish watershed planning and advisory councils for the Athabasca and Peace watersheds.		✓	✓
» Complete watershed management plans for the Milk, Oldman, Bow, Red Deer and North Saskatchewan watersheds.		✓	✓

» Establish, as part of watershed management plans, objectives for aquatic ecosystems.		✓	
» Adopt a multi-barrier; source-to-tap approach at all drinking water facilities.	✓		
» Administer and operate Alberta's water management system to meet transboundary agreements.			✓
» Support watershed stewardship groups to improve the condition of local watersheds.	✓	✓	✓

Long-Term *(2010/11 to 2013/14)*	SAFE, SECURE DRINKING WATER SUPPLY	HEALTHY AQUATIC ECO-SYSTEMS	RELIABLE QUALITY WATER SUPPLIES FOR A SUSTAINABLE ECONOMY
» Complete watershed management plans for all major watersheds.	✓	✓	✓
» Establish an adaptive management system for identifying issues, gathering information, developing and implementing action plans, and evaluating management actions.	✓	✓	✓
» Upgrade all drinking water facilities to meet new drinking water standards as they are implemented.	✓		
» Upgrade drinking water in provincial parks and recreation areas to meet new drinking water standards as they are implemented.	✓		
» Design and implement regional water systems.	✓		
» Establish a plan to manage Alberta's provincial and district-owned water infrastructure for long-term sustainability.			✓
» Maintain and enhance aquatic ecosystems to ensure they meet the established objectives.		✓	

Additional details on all of these actions are available online at www.waterforlife.gov.ab.ca

meeting the need

issues:

regional differences in water management issues

+

growing demand for public involvement in planning and decision-making

+

shared responsibility for water management

=

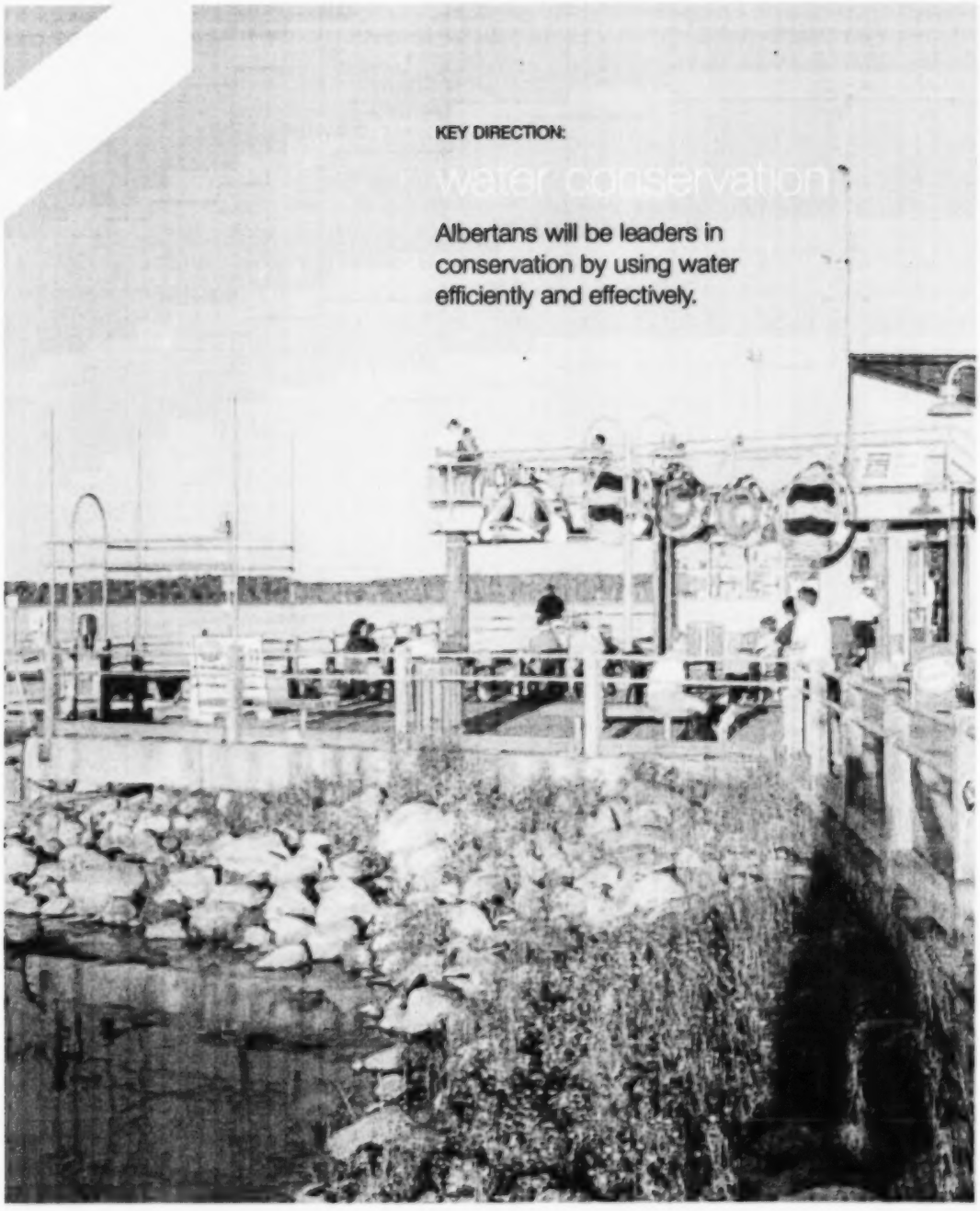
a need for regionally based solutions developed in collaboration with stakeholders and the public

solution: partnership approach to watershed management

KEY DIRECTION:

water conservation

Albertans will be leaders in conservation by using water efficiently and effectively.



Over the past one hundred years, water has been withdrawn from Alberta's rivers, lakes and aquifers to be used for a variety of human purposes. But within each watershed there is a limited amount of water that can be withdrawn and still maintain a healthy aquatic ecosystem, and once this amount of water is being used there is no further water available within that watershed.

In the past, Alberta has been able to manage our water supply, while maintaining a healthy aquatic environment because there has been a relatively abundant, clean supply to meet the needs of communities and the economy. However, fluctuating and unpredictable water supply in recent years has stressed the need to make some major shifts in how we use and allocate this renewable, but finite, resource.

At present, the limit of available water has been reached in a number of watersheds, is being approached in others and, as growth in the economy and population continues, will be reached in Alberta's remaining watersheds.

The solution to this looming problem comes through a combination of both improving our ability to capture and store water during high flow seasons or periods where possible and feasible, as well as improving water use practices through significant conservation efforts.

During all stages of the consultation on the water strategy, Albertans stated again and again that water conservation, combined with a focus on getting the most production possible from the water that is already allocated, is a fundamental component of any provincial water strategy.

Because citizens, communities, industries and governments all share responsibility for the wise use and sustainability of water, and building on the partnership approach all Albertans will need to take responsibility and take actions in the area of water conservation.

Specific actions related to water conservation include, but are not limited to, the following:

Short-Term *(2004/05 to 2006/07)*	SAFE, SECURE DRINKING WATER SUPPLY	HEALTHY AQUATIC ECO-SYSTEMS	RELIABLE QUALITY WATER SUPPLIES FOR A SUSTAINABLE ECONOMY
• Establish a system to monitor and report actual water use by all sectors on an on-going basis.	✓		✓
• Determine and report on the true value of water in relation to the provincial economy.	✓	✓	✓
• Complete an evaluation and make recommendations on the merit of economic instruments to meet water conservation and productivity objectives.	✓	✓	✓
• Establish a public awareness and education program on water conservation in Alberta.	✓	✓	✓

Medium-Term *(2007/08 to 2009/10)*	SAFE, SECURE DRINKING WATER SUPPLY	HEALTHY AQUATIC ECO-SYSTEMS	RELIABLE QUALITY WATER SUPPLIES FOR A SUSTAINABLE ECONOMY
▸ Prepare water conservation and productivity plans for all water using sectors.	✓		✓
▸ Implement economic instruments as necessary to meet water conservation and productivity objectives.	✓	✓	✓

Long-Term *(2010/11 to 2013/14)*	SAFE, SECURE DRINKING WATER SUPPLY	HEALTHY AQUATIC ECO-SYSTEMS	RELIABLE QUALITY WATER SUPPLIES FOR A SUSTAINABLE ECONOMY
▸ Establish an on-going monitoring program to ensure all sectors are achieving water conservation and productivity objectives.	✓		✓

Additional details on all of these actions are available online at www.waterforlife.gov.ab.ca

meeting the need

issues:

water required for current and future economic growth

+

water required for growing population

+

water required for healthy rivers and lakes

+

uncertainty and variability in future water supply

=

more demand for water than is available

solution: water conservation

measuring success:

Although implementation of the provincial water strategy will involve many partners, the Government of Alberta retains accountability to report on the results and outcomes of policy, regulation and decisions.

As part of that process, beginning in the 2004/05 fiscal year, specific performance measures will be established and used as part of the Government of Alberta business planning process.

Specific performance measures that will be used to monitor the effectiveness of this strategy include:

- **Drinking water safety** – provides an indicator of the performance of facilities in delivering safe drinking water, and demonstrates continuous improvement of facilities and their operations.
- **Water quality** – provides an index based on total loading on a river reach or basin basis for point source discharges.
- **Water use efficiency and productivity** – compares the amount of water used versus the amount of productivity, and compares the amount of water used versus population and economic growth.

Additional measures, and enhancements to these measures, will be developed in partnership with the Provincial Water Advisory Council, as part of the implementation of specific actions.

appendix

GOAL:

safe, secure drinking water supply

	outcome	actions: *knowledge & research*	*partnerships*	*water conservation*
short-term (2004/05-2006/07)	• Alberta has a comprehensive strategy to protect Albertans' drinking water.	• Complete an assessment of all drinking water facilities in the province. • Establish a public awareness and education program to ensure Albertans have easy access to water resource information and services. • Establish an independent, on-going review process, on a five-year cycle, for Alberta's drinking water program. • Establish emergency protocols, including support by staff and laboratory capacity, to protect Albertans from contaminants in drinking water. • Complete an assessment of Alberta's surface water quality. • Establish a provincial, multidisciplinary water research centre. • Develop a provincial water research plan.	• Establish municipal grant criteria to support the development of regional water systems. • Establish a Provincial Water Advisory Council. • Complete a partnership framework, outlining the roles, responsibilities and relationships between government and its partners.	• Establish a system to monitor and report actual water use by all sectors on an on-going basis. • Determine and report on the true value of water in relation to the provincial economy. • Complete an evaluation and make recommendations on the merit of economic instruments to meet water conservation and productivity objectives. • Establish a public awareness and education program on water conservation in Alberta.
medium-term (2007/08-2009/10)	• Albertans have full and complete knowledge of drinking water issues. • Albertans have real-time access to information about drinking water quality in their community.	• Provide Albertans with access to online reporting of all drinking water facility test sample results. • Improve availability and access of information to all Albertans on private water systems. • Establish a provincial water information centre that brings together information from both private and public sources. • Report research results to Albertans. • Update water quality programs to support watershed protection and planning.	• Adopt a multi-barrier/source-to-tap approach at all drinking water facilities. • Support watershed stewardship groups to improve the condition of local watersheds.	• Prepare water conservation and productivity plans for all water using sectors. • Implement economic instruments as necessary to meet water conservation and productivity objectives.
long-term (2010/11-2013/14)	• Alberta's drinking water infrastructure meets emerging standards and is managed for long-term sustainability. • Albertans have the knowledge, tools and motivation to implement actions that will maintain or improve the province's water resource.	• Establish a waterborne health surveillance and reporting system. • Understand the state of the quality and quantity of all surface water supply in all major basins. • Understand the state of the quality and quantity of Alberta's groundwater supply.	• Upgrade all drinking water facilities to meet new drinking water standards as they are implemented. • Upgrade drinking water in provincial parks and recreation areas to meet new drinking water standards as they are implemented. • Design and implement regional water systems. • Complete watershed management plans for all major watersheds. • Establish an adaptive management system for identifying issues, gathering information, developing and implementing action plans, and evaluating management actions.	• Establish an on-going monitoring program to ensure all sectors are achieving water conservation and productivity objectives.

GOAL:

healthy aquatic ecosystems

	outcome	actions *knowledge & research*	*partnerships*	*water conservation*
short-term (2004/05-2006/07)	▪ Efforts to protect aquatic ecosystems in critical areas are underway.	▪ Establish science-based methods for determining the ecological requirements for a healthy aquatic environment. ▪ Develop a system for monitoring and assessing aquatic ecosystems. ▪ Complete an assessment of Alberta's surface water quality. ▪ Establish a provincial, multidisciplinary water research centre. ▪ Develop a provincial water research plan. ▪ Establish a public awareness and education program to ensure Albertans have easy access to water resource information and services.	▪ Establish water conservation objectives for the South Saskatchewan River Basin. ▪ Develop a wetland policy and supporting action plan to achieve sustainable wetlands. ▪ Establish a Provincial Water Advisory Council. ▪ Complete a partnership framework, outlining the roles, responsibilities and relationships between government and its partners. ▪ Establish watershed planning and advisory councils for the Milk, Oldman, Bow, Red Deer, Battle, North Saskatchewan, Cold Lake-Beaver River, and Lesser Slave Lake watersheds. ▪ Complete watershed management plans for the South Saskatchewan, Battle, Cold Lake-Beaver, and Lesser Slave Lake watersheds.	▪ Establish a public awareness and education program on water conservation in Alberta. ▪ Determine and report on the true value of water in relation to the provincial economy. ▪ Complete an evaluation and make recommendations on the merits of economic instruments to meet water conservation and productivity objectives.
medium-term (2007/08-2009/10)	▪ Water management objectives and priorities for sustaining aquatic ecosystems are established through watershed plans.	▪ Complete an initial assessment of the status of aquatic ecosystems, including lakes, wetlands, streams and rivers. ▪ Update water quality programs to support watershed protection and planning. ▪ Establish a provincial water information centre that brings together information from both private and public sources. ▪ Report research results to Albertans.	▪ Establish, as part of watershed management plans, objectives for aquatic ecosystems. ▪ Establish watershed planning and advisory councils for the Athabasca and Peace watersheds. ▪ Complete watershed management plans for the Milk, Oldman, Bow, Red Deer and North Saskatchewan watersheds. ▪ Support watershed stewardship groups to improve the condition of local watersheds.	▪ Implement economic instruments as necessary to meet water conservation and productivity objectives.
long-term (2010/11-2013/14)	▪ Water is managed and allocated to sustain aquatic ecosystems and ensure their contribution to Alberta's natural capital and quality of life are maintained. ▪ Albertans have the knowledge and tools to implement actions to maintain or improve Alberta's water resources. ▪ Communities are demonstrating leadership in watershed management.	▪ Understand the state of Alberta's aquatic ecosystem. ▪ Understand the state of the quality and quantity of Alberta's groundwater supply. ▪ Understand the state of the quality and quantity of Alberta's groundwater supply.	▪ Maintain and enhance aquatic ecosystems to ensure they meet the established objectives. ▪ Complete watershed management plans for all major watersheds. ▪ Establish an adaptive management system for identifying issues, gathering information, developing and implementing action plans, and evaluating management actions.	

GOAL:

reliable, quality water supplies for a sustainable economy

	outcome	actions		
		knowledge & research	*partnerships*	*water conservation*
short-term (2004/05-2006/07)	▪ A broad range of water management tools and techniques are implemented. ▪ Albertans understand the value of water to the economy and quality of life.	▪ Determine the full cost of providing water through Alberta's water management infrastructure. ▪ Establish a provincial, multidisciplinary water research centre. ▪ Develop a provincial water research plan. ▪ Establish a public awareness and education program to ensure Albertans have easy access to water resource information and services. ▪ Complete an assessment of Alberta's surface water quality.	▪ Authorize water allocation transfers within all watersheds. ▪ Develop and implement transboundary agreements in cooperation with neighbouring jurisdictions. ▪ Continue to manage water resources on the "first-in-time, first-in-right" principle, and in accordance with the provincial *Water Act*. ▪ Evaluate, as part of the watershed planning process, water management infrastructure needs. ▪ Establish a Provincial Water Advisory Council. ▪ Complete a partnership framework, outlining the roles, responsibilities and relationships between government and its partners. ▪ Establish watershed planning and advisory councils for the Milk, Oldman, Bow, Red Deer, Battle, North Saskatchewan, Cold Lake-Beaver River, and Lesser Slave Lake watersheds. ▪ Complete watershed management plans for the South Saskatchewan, Battle, Cold Lake-Beaver, and Lesser Slave Lake watersheds.	▪ Establish a system to monitor and report actual water use by all sectors on an on-going basis. ▪ Determine and report on the true value of water in relation to the provincial economy. ▪ Complete an evaluation and make recommendations on the merit of economic instruments to meet water conservation and productivity objectives. ▪ Establish a public awareness and education program on water conservation in Alberta.
medium-term (2007/08-2009/10)	▪ Water management objectives and priorities to support sustainable economic development are established through watershed plans. ▪ All sectors are demonstrating best management practices and improving efficiency and productivity associated with water use.	▪ Monitor, evaluate and report on the water allocation transfer system. ▪ Establish a provincial water information centre that brings together information from both private and public sources. ▪ Report research results to Albertans.	▪ Administer and operate Alberta's water management system to meet transboundary agreements. ▪ Establish watershed planning and advisory councils for the Athabasca and Peace watersheds. ▪ Complete watershed management plans for the Milk, Oldman, Bow, Red Deer and North Saskatchewan watersheds. ▪ Support watershed stewardship groups to improve the condition of local watersheds.	▪ Prepare water conservation and productivity plans for all water using sectors. ▪ Implement economic instruments as necessary to meet water conservation and productivity objectives.
long-term (2010/11-2013/14)	▪ Water is managed and allocated to support sustainable economic development and the strategic priorities of the province. ▪ The overall efficiency and productivity of water use in Alberta has improved by 30 per cent from 2005 levels by 2015 (firm targets to be determined by the Provincial Water Advisory Council). ▪ Albertans have the knowledge, tools and motivation to implement actions that will maintain or improve the province's water resources.	▪ Review the water allocation transfer system to ensure a viable market that moves water to support sustainable economic development. ▪ Complete flood risk maps and warnings systems for all communities where a flood risk exists. ▪ Understand the state of the quality and quantity of all surface water supply in all major basins. ▪ Understand the state of the quality and quantity of Alberta's groundwater supply.	▪ Manage Alberta's provincial and district-owned water infrastructure for long-term sustainability. ▪ Complete watershed management plans for all major watersheds. ▪ Establish an adaptive management system for identifying issues, gathering information, developing and implementing action plans, and evaluating management actions.	▪ Establish an on-going monitoring program to ensure all sectors are achieving water conservation and productivity objectives.

glossary

Allocation » When water is redirected for a use other than for domestic purposes, it is referred to as an allocation. Agricultural, industrial and municipal water users apply to Alberta Environment for a licence to use a set allocation of water. This water licence outlines the volume, rate and timing of a diversion of water.

Approval » An approval provides authority for constructing works or for undertaking an activity within a water body. The approval includes conditions under which the activity can take place.

Aquatic ecosystem » An aquatic area where living and non-living elements of the environment interact. These include rivers, lakes and wetlands, and the variety of plants and animals associated with them.

Aquifer » An underground water-bearing formation that is capable of yielding water. Aquifers have specific rates of discharge and recharge. As a result, if groundwater is withdrawn faster then it can be recharged, the underground aquifer cannot sustain itself.

Consumptive use » The balance of water taken from a source that is not entirely or directly returned to that source. For example, if water is taken from a lake to feed cattle, it is considered a consumptive use of water.

Diversion of water » The impoundment, storage, consumption, taking or removal of water for any purpose. This does not include the taking or removal for the sole purpose of removing an ice jam, drainage, flood control, erosion control or channel realignment.

Domestic water use » Water used for drinking, cooking, washing and yard use. A very small percentage of the water used in this province is used for domestic purposes.

Drinking water » Water that has been treated to provincial standards and is fit for human consumption.

***Environmental Protection and Enhancement Act* »** This is provincial legislation that takes an integrated approach to the protection of Alberta's air, land and water. One of the Act's cornerstones is the guarantee of public participation in decisions affecting the environment. This public involvement includes increased access to information, participation in the Environmental Assessment and Approval Processes and the right, when directly affected, to appeal certain decisions.

First-in-time, first-in-right » The principle used to prioritize water rights in Alberta. This principle, established in 1894, means that water rights are prioritized according to how senior the licence is, regardless of its use. The older the licence, the higher the user is on the priority list.

Groundwater » All water under the surface of the ground whether in liquid or solid state. It originates from rainfall or snowmelt that penetrates the layer of soil just below the surface. For groundwater to be a recoverable resource, it must exist in an aquifer. Groundwater can be found in practically every area of the province, but aquifer depths, yields and water quality vary.

Habitat » This term used to describe the natural home of a living organism. The three components of wildlife habitat are food, shelter and water.

Household purposes » Water used for human consumption, sanitation, fire prevention and watering animals, gardens, lawns and trees.

Hydrologic cycle (water cycle) » The hydrologic cycle is the process by which water evaporates from oceans and other bodies of water, accumulates as water vapor in clouds, and returns to oceans and other bodies of water as rain and snow, or as run-off from this precipitation or as groundwater.

Instream needs » This is the scientifically determined amount of water, flow rate or water level that is required in a river or other body of water to sustain a healthy aquatic environment or to meet human needs such as recreation, navigation, waste assimilation, or aesthetics. An instream need is not necessarily the same as the natural flow.

Irrigation district » A water delivery system for a given region. In Alberta, there are 13 irrigation districts used for agriculture supplying about 50 communities with water for domestic use.

Micro-organisms » Also known as microbes, tiny living organisms that can be seen only with the aid of a microscope. Some micro-organisms can cause acute health problems when consumed in drinking water.

Natural flow » Natural flow is the flow in rivers that would have occurred in the absence of any man-made effects.

Non-consumptive use » A use of water in which all of the water used is directly returned to the source from which it came. For example, water used in the production of hydroelectricity is a non-consumptive water use.

Non-point source pollution » Non-point source pollution is contamination that cannot be identified as originating from one site. This type of pollution comes from a larger area of land and is carried by run-off and groundwater.

Organic contaminants » Carbon-based chemicals, such as solvents and pesticides, which can get into water through run–off from cropland or discharge from factories.

Point source pollution » This is pollution that originates from an identifiable cause or location, such as a sewage treatment plant or feedlot.

Potable water » Water that is fit for human consumption, but has not been treated.

Raw water » Water in its natural state, prior to any treatment for drinking.

Reservoir » A man-made lake which collects and stores water for future uses. During periods of low river flow, reservoirs can release additional flow if water is available.

Riparian area » The area along streams, lakes and wetlands where water and land interact. These areas support plants and animals, and protect aquatic ecosystems by filtering out sediments and nutrients originating from upland areas.

River basin » An area of land drained by a river and its associated streams or tributaries. Alberta's *Water Act* identifies seven major river basins within the province:
- Peace/Slave River Basin
- Athabasca River Basin
- North Saskatchewan River Basin
- South Saskatchewan River Basin
- Milk River Basin
- Beaver River Basin
- Hay River Basin

River reach » A group of river segments with similar biophysical characteristics. Most river reaches represent simple streams and rivers, while some river reaches represent the shorelines of wide rivers, lakes and coastlines.

Run–off » This refers to water that moves over the surface of the ground. Run–off collects sediments and contaminants as it moves from higher elevations to lower elevations.

Surface water » Most Albertans get their water from surface water sources such as lakes and rivers. The run-off from rain and snow renews our surface water sources each year. If the demand for surface water is higher than the supply, there will not be enough available to balance the needs of Albertans, the economy and the environment.

Water Act » In Alberta, the *Water Act* is used to protect the quality of water and to manage its distribution. This legislation regulates all developments and activities that might affect rivers, lakes and groundwater.

Water allocation transfer » A water allocation transfer occurs after the holder of an existing water withdrawal licence agrees to provide all or part of the amount they are allocated to another person or organization, Alberta Environment next approve any transfer of this kind. When this occurs, the allocation is separated from the original land, and a new licence, with the seniority of the transferred allocation, is issued and attached to the new location. Under the *Water Act*, Alberta Environment can place conditions on the new licence. Water allocation transfers can occur only if authorized under an approved water management plan, or by the Lieutenant Governor in Council.

Water body » Any location where water flows or is present, whether or not the flow or the presence of water is continuous, intermittent or occurs only during a flood. This includes, but is not limited to, wetlands and aquifers.

Water conservation » Conservation is the planned protection, improvement and wise use of natural resources. It includes controlling, protecting and managing water.

Water conservation objective » As outlined in Alberta's *Water Act*, a water conservation objective is the amount and quality of water necessary for the protection of a natural water body or its aquatic environment. It may also include water necessary to maintain a rate of flow or water level requirements.

Water licence » A water licence provides the authority for diverting and using surface water or groundwater. The licence identifies the water source; the location of the diversion site; an amount of water to be diverted and used from that source; the priority of the "water right" established by the licence; and the condition under which the diversion and use must take place.

Water management plan » *Alberta's Framework for Water Management Planning* outlines the process for water management planning and the components required for water management plans in the province. It applies to all water bodies, including streams, rivers, lakes, aquifers and wetlands.

Water well » An opening in the ground, whether drilled or altered from its natural state, that is used for the production of groundwater, obtaining data on groundwater, or recharging an underground formation from which groundwater can be recovered. By definition in the provincial *Water Act*, a water well also includes any related equipment, buildings, and structures.

Watershed » A watershed is the area of land that catches precipitation and drains into a larger body of water such as a marsh, stream, river or lake.

Watershed approach » A watershed approach focuses efforts within watersheds, taking into consideration both ground and surface water flow. This approach recognizes and plans for the interaction of land, waters, plants, animals and people. Focusing efforts at the watershed level gives the local watershed community a comprehensive understanding of local management needs, and encourages locally led management decisions.

Wetland » Wetlands are formed in depressions or low areas where the ground is saturated with water or is flooded. Alberta has five types of wetlands: bogs, fens, swamps, marshes and ponds.